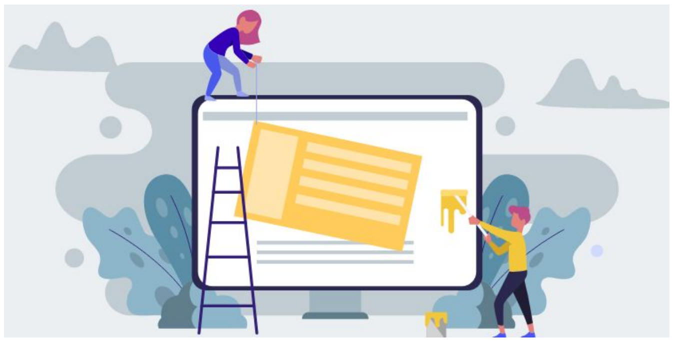
How to Create A Custom Block Without Plugin (Updated 2022)

BY HENNER SETYONO / ON 16 AUG 2022 / 11 COMMENTS

#GUTENBERG



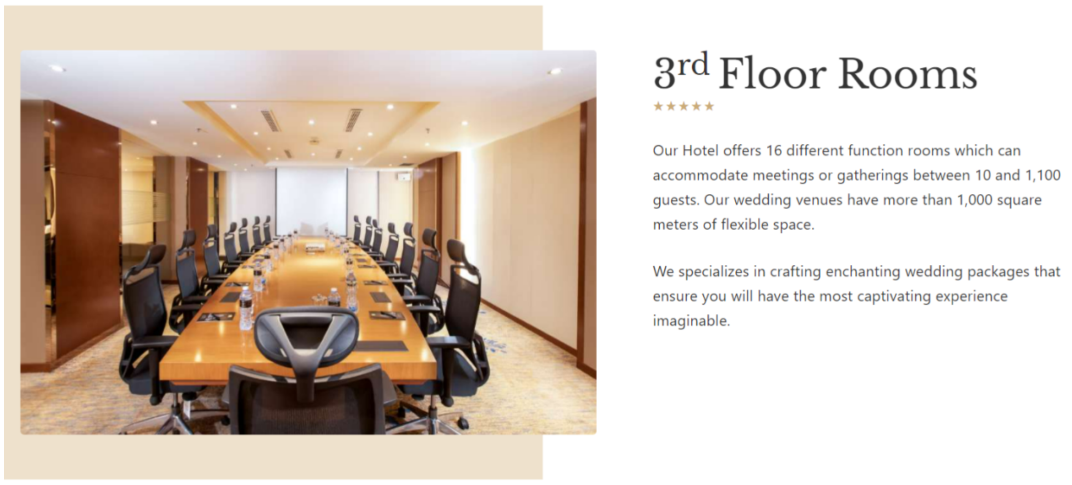
Creating a custom block isn't an easy feat especially if you are not comfortable with pure JavaScript. Hopefully, this guide can help you with that.

Before Making Custom Block

First, ask this question before wasting time creating a redundant block:

> "Is there an existing block that fits your need?"

For example, I once need to create this design in Gutenberg:



3rd Floor Rooms

★★★★★

Our Hotel offers 16 different function rooms which can accommodate meetings or gatherings between 10 and 1,100 guests. Our wedding venues have more than 1,000 square meters of flexible space.

We specializes in crafting enchanting wedding packages that ensure you will have the most captivating experience imaginable.

The general layout can be achieved with **Media-Text** block. But there's no option to create a colored box behind the image. We also don't have an option to add five stars below the **Heading**.

So we create 2 custom styles, one for Media-Text, and one for Heading:

```php
functions.php

register_block_style('core/media-text', [
  'name' => 'half-bg',
  'label' => 'Half Background'
]);

register_block_style('core/heading', [
  'name' => 'has-stars',
  'label' => 'Has Stars'
]);
```
PHP

Now we can use pseudoselector `::before` and `::after` to create that design like this:

```css
style.css

.wp-block-media-text.is-style-half-bg {
  position: relative;
}
.wp-block-media-text.is-style-half-bg::before {
  content: "";
  position: absolute;
  top: 0;
  left: -3rem
  bottom: 0;
  width: 50%;
  background-color: #eee1cc;
}

h1.is-style-has-stars::after,
h2.is-style-has-stars::after,
h3.is-style-has-stars::after {
  content: "★★★★★";
  order: 2;
  display: block;
  width: 100%;
  font-size: 14px;
  letter-spacing: 2px;
  color: #ba9556;
}
```
CSS

If none of the existing blocks fits your need, continue the tutorial below.

1. Register Assets & Block Type

This tutorial uses this directory structure, adapt it according to your theme:

```
my-theme/
├ css/
|  ├ my-block.css
|  ├ ...
├ js/
|  ├ my-block.js
|  ├ ...
├ functions.php
├ ...
```

- `my-block.js` is for the admin editor.
- `my-block.css` is for both the front end and the admin editor.

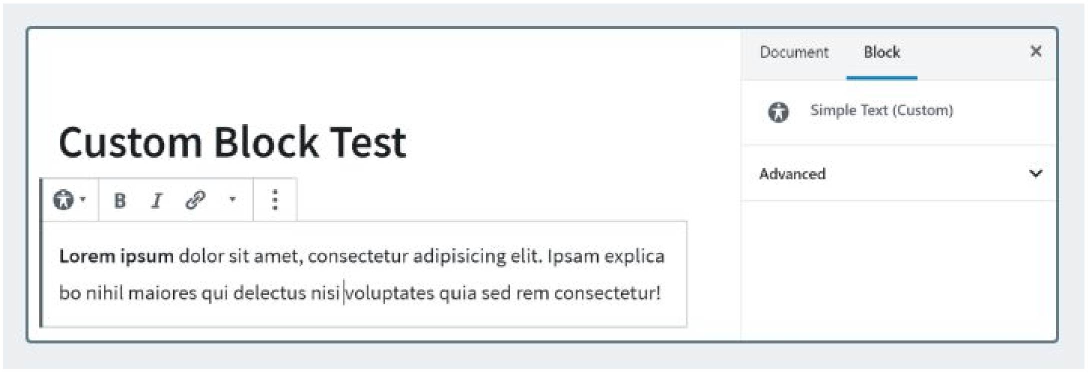
Now let's enqueue them:

```php
functions.php

add_action('wp_enqueue_scripts', 'my_enqueue_assets');
add_action('enqueue_block_editor_assets', 'my_enqueue_block_assets');

function my_enqueue_assets() {
  $css_dir = get_stylesheet_directory_uri() . '/css';
  wp_enqueue_style('my-block', $css_dir . '/my-block.css', []);
}

function my_enqueue_block_assets() {
  $css_dir = get_stylesheet_directory_uri() . '/css';
  $js_dir = get_stylesheet_directory_uri() . '/js';

  // If in plugin, use this instead:
  // $css_dir = plugin_dir_url(__FILE__) . 'css';
  // $js_dir = plugin_dir_url(__FILE__) . 'js';

  wp_enqueue_script('my-block', $js_dir . '/my-block.js', [ 'wp-blocks', 'wp-dom
  wp_enqueue_style('my-block', $css_dir . '/my-block.css', [ 'wp-edit-blocks' ])
}
```

PHP

2. What We Are Building

We will build a simple text field. It's pretty much useless since we have Paragraph block, but this is just to introduce you to the syntax:



Custom Block Test

Lorem ipsum dolor sit amet, consectetur adipisicing elit. Ipsam explica bo nihil maiores qui delectus nisi voluptates quia sed rem consectetur!

Our “Simple Text” custom block in action

3. The Script

Gutenberg uses a library called **React**. If you are not familiar with it, the code below will look taunting. But don’t worry, we will explain it the best we could.

```
js/my-block.js

(() => {
  const el = window.wp.element.createElement;
  const { registerBlockType } = window.wp.blocks;
  const { RichText } = window.wp.blockEditor;

  registerBlockType('my/simple-text', {
    title: 'Simple Text (Custom)',
    icon: 'universal-access-alt',
    category: 'layout',
    attributes: {
      content: {
        type: 'array',
        source: 'children',
        selector: 'p',
      },
    },
    edit: myEdit,
    save: mySave
  });

  // what's rendered in admin
  function myEdit(props) {
    const atts = props.attributes;

    return el(RichText, {
      tagName: 'p',
      className: props.className,
      value: atts.content,

      // Listener when the RichText is changed.
      onChange: (value) => {
        props.setAttributes({ content: value });
      },
    });
  }

  // what's saved in database and rendered in frontend
  function mySave(props) {
    const atts = props.attributes;

    return el(RichText.Content, {
      tagName: 'p',
      value: atts.content,
    });
  }
})();
```
JS

Let's break down the code:

SELF INVOKING FUNCTION

```
(() => {
  ...
})();
```
JS

This wrapper is used to enclose our code. So any variables or functions defined here won't leak to the outside.

WP BLOCKS LIBRARY

```
const el = window.wp.element.createElement;
const { registerBlockType } = window.wp.blocks;
const { RichText } = window.wp.blockEditor;
```
JS

Gutenberg already provided us with many reusable functions and elements such `wp.blockEditor.RichText`.

The code above is just re-assigning the variable so it's easier to use later.

REGISTER BLOCK

```
registerBlockType('my/simple-text', {
  title: 'Simple Text (Custom)',
  icon: 'universal-access-alt',
  category: 'layout',
  attributes: {
    content: {
      type: 'array',
      source: 'children',
      selector: 'p',
```

```js
    },
  },
  edit: myEdit,
  save: mySave
});
```
JS

- `my/simple-text` – The block's slug. This will translate into the wrapper's class name like "wp-block-my-simple-text".
- `title` – Is what appears when selecting the block.
- `icon` – Click here for a list of available icons.
- `attributes` – List of variables for the block. `source` and `selector` defines how to extract the value from saved content. More info»
- `edit` – Callback on how to render the content in the editor.
- `save` – Callback on how to render the content before saved to the database.

EDIT

```js
function myEdit(props) {
  const atts = props.attributes;

  return el(RichText, {
    tagName: 'p',
    className: props.className,
    value: atts.content,

    // Listener when the RichText is changed.
    onChange: (value) => {
      props.setAttributes({ content: value });
    },
  });
}
```
JS

Edit function returns the elements that are rendered in Gutenberg. Here's the breakdown:

- **`el(...)`** – create an HTML element.
- **`RichText`** – a special element from Gutenberg. It's like `<input type="text">` but has a toolbar to bold, italic, anchor link, etc.
- **`tagName`** – wraps the RichText with `<p>`.
- **`value`** – uses the `content` variable we defined in `attributes` as the value of this RichText.
- **`onChange`** – updates the `content` variable as we type.

SAVE

```
function mySave(props) {
  const atts = props.attributes;

  return el(RichText.Content, {
    tagName: 'p',
    value: atts.content,
  });
}
```
JS

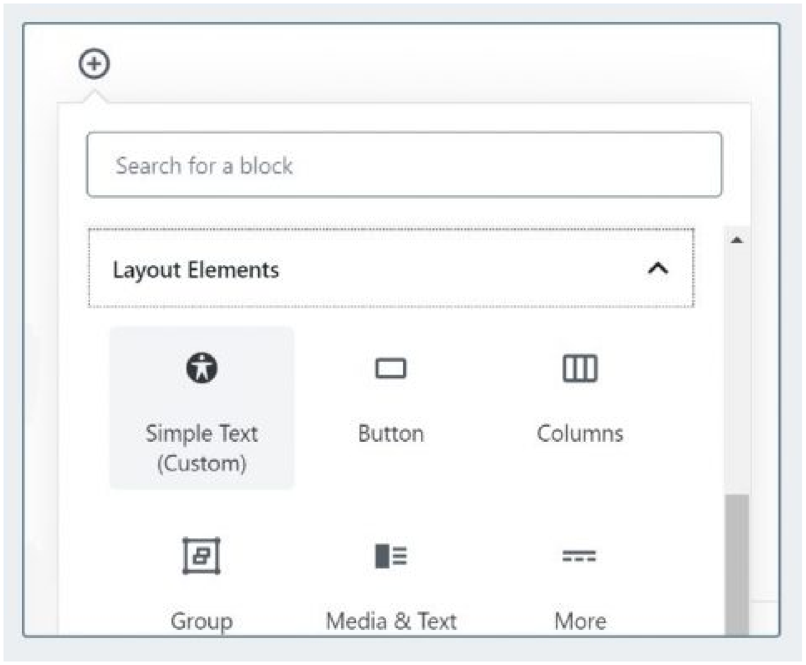
The HTML returned here is saved into the database. In turn, this is also what is shown on the front end.

4. The Style

Our custom block is just a standard field text, so the CSS is just this:

```
css/my-block.css

.wp-block-my-simple-text {
  border: 1px solid rgba(0,0,0,.1);
  padding: 1rem;
}
```
CSS

Done! Go check out your block in the editor. You should see your custom block listed like this:



Selecting the custom block

• • •

Conclusion

Creating a custom block is difficult and can get ugly. So try to use a **custom block style** as shown above whenever possible.

If you are interested to learn more, we made an extensive tutorial on our Github. It also included the code with React JSX syntax:

Learn More from Our Github

> Feel free to leave a question below regarding custom block 🙂

Note: This article is originally written in March 2019. It has been updated to reflect the standard way in the latest WP version.

# gutenberg # javascript # php

Written by

Henner Setyono

A web developer who mainly build custom theme for WordPress since 2013. Young enough to never had to deal with using Table as layout.

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Bart

OCT 14, 2021 / 8:28 PM REPLY

Shouldn't the path to the file in point 2 and 3 be '/assets/js/my-block-admin.js' - same as enqued scripts file?

> **Henner Setyono**
> OCT 15, 2021 / 1:49 PM REPLY
>
> Hi Bart, thanks for noticing the mistake. I have fixed it

Stevan
MAR 27, 2022 / 7:48 PM REPLY

I literally copied and pasted and it's not working on my website.

Is there something else I need to do?

> **Henner Setyono**
> MAR 28, 2022 / 8:47 AM REPLY
>
> Hi, your theme folder structure probably different from mine
>
> > **Stevan**
> > NOV 16, 2022 / 9:13 PM REPLY
> >
> > Hi Henner,
> >
> > I copied the way you posted it on the website. It's the same structure, I'm using the 2020 theme.
> >
> > > **Henner Setyono**
> > > NOV 16, 2022 / 9:21 PM REPLY
> > >
> > > Hi, I received your email containing more detail about the error. It might be because you're in a child theme and therefore need to use `get_template_directory_uri()` instead of `get_stylesheet_directory_uri()` when enqueuing it.
> > >
> > > If you still have trouble, we can continue the conversation in email. Thanks

Cathy

AUG 16, 2022 / 1:40 AM REPLY

This doesn't work. All it does is show an icon. I have a feeling lots of steps are missing. Are there suppose to be .css files? If so, what for? This kind of coding is new to a lot of people, if you know more, it would be nice to share or at least point people to the right recourses.

> **Henner Setyono**
>
> AUG 16, 2022 / 8:16 AM REPLY
>
> Hi Cathy, I think your JS and CSS aren't enqueued. Make sure the directory and file name point to your CSS and JS file.
>
> I will make an edit to explain some stuff further. Thanks for the input.
>
> You can also refer to this Github repo containing all the Gutenberg tutorials I wrote: https://github.com/hrsetyono/gutenberg-tutorial
>
> It's a working plugin, so you can install it and check out the blocks.

Andy

OCT 28, 2022 / 9:57 PM REPLY

I have this error : "props is not defined" ?

> **Henner Setyono**
>
> OCT 28, 2022 / 10:37 PM REPLY
>
> Hi, I have changed the code snippet to fix that error. Thanks for pointing it out

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